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Programs and Experimentation

A REPORT TO THE ILLINOIS BOARD OF HIGHER EDUCATION / **1966**

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FRANK SPENCER, Chicago Representative, United Press International

A report to the Board of Higher Education for its use in developing a "Master Plan" for higher education in Illinois. This report is the work of the study committee and is NOT the work of the board or its staff.

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REPORT OF MASTER PLAN COMMITTEE

O

PROGRAMS AND EXPERIMENTATION

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PREFACE

Committee O — Programs and Experimentation — was organized on December 10, 1965, as a technical committee of the Illinois Board of Higher Education. The committee met twice a month to investigate the working questions originally formulated by the board on September 27, 1965 (see Appendix A). As these questions were examined numerous side issues appeared which required exploration. The problems relating to possible experimental or innovative programs seemed to increase in number and significance as time passed. Subcommittees attacked various issues. Individual committee members accepted assignments of questions for which they developed position papers which later guided deliberations of the committee.

Ultimately the committee resolved to make four recommendations and to suggest several significant concerns which deserve depth study by other groups. The recommendations suggest that new groups with expert professional knowledge be constitued to plan in depth the implementation of the proposals presented in this report. In suggesting utilization of the committee mechanism, Committee O trusts that the Board of Higher Education will see fit to appoint committees with power to implement these recommendations.

committee for their labors and concern in the midst of their busy schedules. The committee is most appreciative of the efforts of Dr. Lyman A. Glenny to set it on course in its initial meetings and of Dr. Arthur D. Browne who was most efficient as secretary of the committee. The chairman is indebted to his secretary, Mrs. Frances Holcombe, and to the secretarial staff of the Board of Higher Education for their valued help in preparation of this report.

C. Leplie Kanatzar
Chairman

Jacksonville, Illinois
May 26, 1966

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TABLE OF CONTENTS

Introduction 1
Summary of Recommendations 2
Regional Associations for Instructional Resources 2
Experimentation and Innovation in Existing Institutions . . 2
Academic Libraries 2
Experimental College 2
Other Problems 3
Section I. Recommendations of Programs and Experimentation 3
1. Regional Associations of Institutions for Mutual Assistance in Providing Instructional Resources. . . . 3
2. Encouragement of Instructional Experimentation and Innovation in Existing Institutions 4
3. Academic Libraries 4
4. An Experimental College 5
Section II. Areas of Special Concern for the Future 7
1. Articulation of the Community College with the Four-Year College 7
2. Education of the Underprivileged 7
3. Coordinative Education for Adults 8
4. Technical Education 9
5. Automated and Programed Learning 9
6. Programs at the Graduate Level for Meeting Mid-Career Needs 10
7. Development of a Television Network for the State. . .12
Appendix A. Committee O Programs and Experimentation. . .13
Appendix B. Regional Associations of Institutions for Mutual Assistance in Providing Instructional Resources 14
Appendix C. Encouragement of Instructional Experimentation and Innovation in Existing Institutions 21
Appendix D. Academic Libraries 23
Appendix E. The Experimental College 24
Appendix F. Automated and Programed Learning. 28
Appendix G. Programs at the Graduate Level for Meeting Mid-Career Needs 30

INTRODUCTION

Committee O (a technical committee) is an implementation of Recommendation #12 of the Master Plan (pp. 29, 30) dealing with the feasibility of a new four- or two-year college devoted to "educational experimentation for mass education." One of the fundamental problems presented to the committee was the need for experimentation to devise and test procedures enabling more students to be taught by fewer faculty members without sacrifice of quality, in consequence of the increasing shortage of qualified faculty members, burgeoning enrollments, and the competition of research for the faculty member's interest and time.

Suggested considerations included: (1) modern instructional techniques; (2) effective instruction of large numbers of students; (3) programs for underachievers and the disadvantaged of college age; and (4) the potential for experimentation in existing institutions.

Specific topics assigned Committee O in its "charge" of September 27, 1965 (see Appendix A), included: (1) deficiencies in instructional programs; (2) maintenance of quality in undergraduate programs and utilization of modern instructional methods; and (3) an experimental college versus experimental programs in existing institutions, including study of types of experimental programs and of the essential features of a prototype for the experimental college.

The topic of "experimentation" warrants an investigation of wide scope; its nature demands far more time for investigation than was available to the committee. In consequence the committee has confined itself to the exploration of selected areas of interest, not in sequence of importance. The committee does not presume to have investigated all the areas in which experimentation might be worthwhile. The committee sees fit to make recommendations in four areas and to suggest the desirability of specific investigations of half a dozen other areas.

SUMMARY OF RECOMMENDATIONS

Regional Associations for Instructional Resources

Feasibility studies should be financed in at least two regions of the State of Illinois to plan and prepare for an association of public and nonpublic institutions in each region to be of mutual assistance in providing instructional resources and to initiate programs in those regions.

Experimentation and Innovation in Existing Institutions

As a minimum responsibility, the Board of Higher Education should indicate to all public institutions that it encourages thoughtful budget requests for funds to support the special costs of institutions as well as programs which are experimental and innovative.

Academic Libraries

The Board of Higher Education should appoint a special committee to study problems confronting academic libraries, to investigate the feasibility of a centralized library electronically equipped, and to undertake interim measures for satisfying the library needs of those public and nonpublic colleges and universities whose library facilities are below minimal standards.

Experimental College

The Board of Higher Education should support the establishment of an experimental college characterized by a highly selective admissions system and by students of superior intellectual ability and potential, among whom is an appreciable fraction selected because of their disproportionately low level of accomplishment in secondary school or their early failure in college.

Other Problems

The committee recommends an in-depth study of other problems relating to higher education in Illinois, including (1) articulation of the community college with the four-year college; (2) education of the underprivileged; (3) adult or coordinative education; (4) technical education; (5) automated and programed learning; (6) programs at the graduate level for meeting mid-career needs; and (7) the development of an educational television network for the State of Illinois.

SECTION I

RECOMMENDATIONS OF PROGRAMS AND EXPERIMENTATION

1. Regional Associations of Institutions for Mutual Assistance in Providing Instructional Resources

The committee believes that junior and senior institutions of the state should seriously explore the feasibility of joint programs of mutual assistance in developing and testing programs to extend and to improve instruction. Such programs might include, but should not be limited to, televised instruction, programed instruction, computer-assisted instruction, and auto-tutorial systems. Also the programs should include instructional research, coordinated internship programs in college teaching, interlibrary cooperation, and test development for admission, placement, proficiency, and achievement.

These programs would have much to offer all institutions in providing instruction of high quality to increased numbers of students. They are likely to be especially necessary for the junior and developing institutions which frequently will be unable individually to afford or to attract the personnel and facilities such programs require. Hence, it is recommended that there be associations of junior and senior institutions.

Experience suggests, however, that unless the faculty members of each institution can be directly involved in the development and use of the programs, they will be used ineffectively

if at all. It is felt that fuller faculty participation can be achieved through regional associations.

To bring such associations into being will require careful advanced planning and staff work. Therefore, the committee recommends that feasibility studies be financed in at least two regions in order to plan and prepare for an association in each and to initiate programs in them. (See Appendix B.)

2. Encouragement of Instructional Experimentation and Innovation in Existing Institutions

The climate in higher education is becoming more favorable to experimentation in instruction. Within our institutions there are qualified faculty willing to attack problems of instruction. In addition there are institutions within the state which are both experimental and innovative in their total approach to higher education. Results of experiments in curriculum, student alienation, reorganization of traditional disciplines, independent study, development of sense of community in resident and nonresident colleges, the role of programs and media, etc., may be extremely productive not only for the students at one college but for students in the entire state or nation. Both institutional and program experiments should be encouraged. There is a spirit of innovation and experimentation in the air, and now is the time to capitalize upon it.

But under present budget arrangements, it is often difficult to free sufficient funds to support work of this kind. Therefore, the committee recommends that the Board of Higher Education devise and promote policies that will encourage experimentation in instruction and curricula. Specifically, the committee believes that at a minimum the Board of Higher Education should advise public institutions that thoughtful budget requests for funds to support experimentation and innovation would be welcomed. (See Appendix C.)

3. Academic Libraries

Recommendation #20 of the Master Plan suggests that "the State universities place increasing emphasis on upper division

and graduate level instruction and research programs and relatively less emphasis on programs of the lower division level."

In light of the current status of most of our university libraries and the "publication explosion" that has accompanied the "knowledge explosion," it appears financially and physically impossible for each of the universities to bring together and maintain a traditional "university" level library. (See Appendix D.) There is an urgent need of immediate investigation and implementation of new approaches to fulfilling the library needs of our universities.

The answer to this problem may lie in the establishment of a centralized library facility electronically linked to the various universities (both public and nonpublic) requiring its services. The centralized library facility could, by electronic transmission, furnish universities and other subscribers with abstracts of holdings and new acquisitions. Coding of abstracts would enable a student or faculty member, by the use of a dial-retrieval system, to secure almost immediate transmission of a visual picture of the publication which could be read or photocopied as transmitted.

As interim measures to relieve the critical situation currently existing, it is suggested that approaches such as the following would enhance joint use of library materials: (1) liberalization of loan and library privileges for students of neighboring institutions; (2) provision of weekend bus service to the University of Illinois Library for graduate students and faculty of outlying colleges and universities; and (3) increased budgets for personal services and equipment to expedite the exchange of materials by means of photocopying, etc.

The committee recommends that the Board of Higher Education appoint a special committee to study the problems confronting academic libraries, to investigate the feasibility of a centralized library electronically equipped, and to undertake meantime some interim measures to satisfy the library needs of those colleges and universities whose library facilities are below minimal standards. (See Appendix D.)

4. An Experimental College

The committee recommends the establishment of a residential

college of limited size which is based upon the tradition of the liberal arts but is experimental in purpose and design. Its students will be selected by special admission criteria and procedures, the primary requirements being high intellectual ability and potential. While a majority of the students admitted will also present records of superior accomplishment in secondary school or community college, an appreciable minority will be deliberately selected for admission because of their failure of accomplishment.

Such an experimental college will have two principal purposes which will serve to make it experimental and unique. A first purpose will be to develop procedures for the identification, development, and utilization of the academic potential of high ability students whose careers to date have been characterized by a lack of success. A second purpose will be to establish and develop effective procedures to utilize the teaching and leadership potential of students of high ability and academic performance. This group will be intimately a part of the program devised for the motivational, social, cultural, and educational maturation of the others.

While it is not possible to describe such an institution in detail pending deeper study, the committee visualizes the college to be a residential one initially limited to 3,000 students and having physical facilities designed specifically to promote its two main purposes. Its curricula, while rigorous in performance standards, will be flexible, and special procedures for an evaluation of the progress of students will be employed. The academic atmosphere will be one which accommodates easily to the special needs of its students. To be successful, exceptionally effective counseling will be a necessary feature as will a high faculty-student ratio.

Because of its rigorous academic standards and highly selective admissions, the college will enjoy great prestige. A disproportionately high fraction of its graduates will be expected to progress to graduate and professional schools, and the college will very likely prove to be a particularly rich source of the personnel required to staff the state's burgeoning institutions of higher education.

Many parts of the programs, admissions procedures, and progress evaluation methods developed by this college will be

applicable to other more conventional institutions. (See Appendix E.)

SECTION II

AREAS OF SPECIAL CONCERN FOR THE FUTURE

The committee gave some attention to certain problem areas which deserve special consideration by other groups.

1. Articulation of the Community College with the Four-Year College

The articulation of the community college with the four-year college demands immediate attention by those concerned with higher education in Illinois. One of the more serious problems of the transferring student is his orientation and adjustment to the academic life and pace of the four-year institution. The problem is acute in the transfer student's first semester when he must compete as a third-year student with native students of the four-year college who have earlier passed through a selective process in their freshman and sophomore years. If the student survives the first semester after transfer, it is probable that he will achieve as well as do the native students in the remaining three semesters of the traditional eight-semester pattern of undergraduate education. The academic adjustment of the transfer student in his first semester on the campus of the four-year institution constitutes a critical phase in his college career. An experimental approach to the development of procedures to aid the transition between the two-year college and the four-year college is important, and its need is immediate.

2. Education of the Underprivileged

Pilot projects in the education of the underprivileged at the level beyond the secondary school are in progress across the nation, and investigation of the potential of experimental programs in this direction is desirable in Illinois. Committee O suggests that the development of programs for the education of the

underprivileged should not be reserved exclusively to the community college. Any experimental program should include also provision for identification of community college students who are capable of achievement at the advanced undergraduate level. Such a program should be a cooperative one which involves both the four-year colleges and community colleges in the planning and implementation.

3. Coordinative Education for Adults

Committee O recognizes that the formal education of many adults has been interrupted, often by circumstances beyond their control. The current shortages of faculty members and classroom space argue against the development of educational programs demanding the presence of these persons on the campuses of existing or new institutions, thereby increasing the burden of those institutions of higher learning. Nevertheless in the ideal, educational opportunities should be expanded to include the maximum number of residents of the state. Committee O suggests that adult education can be achieved through creative approaches to off-campus programs utilizing educational television and library projects, supervised by the student's area community college. The majority of persons reached by such off-campus programs would not be degree-bound. For the minority who might wish to accumulate college credits, extension programs could be included within the framework of such off-campus programs employing educational television and library resources, again under the auspices of the area community college.

The term, coordinative education, is suggested to designate off-campus programs administered by area community colleges for those persons who, though qualified, do not find it possible to participate in a regular, formal classroom experience of their area community college, and for those whose post-secondary schooling, for whatever reason, is interrupted. The magnitude of this aspect of education is of sufficient dimension to justify the designation of a committee to consider the potential and some of the problems of programs involved in coordinative education.

4. Technical Education

Committee O has briefly considered the desirability of education beyond the level of the secondary school which would provide quality programs in technology, vocational training, and fields not formally a part of higher education. Such institutions would serve (1) students not admissible to colleges and universities; (2) students with mechanical/manipulative skills seeking a vocational or technical education; (3) adults seeking to improve their competence in technological subjects; (4) adults forced to retool their skills because of automation; and (5) disadvantaged students seeking to find vocational opportunities in technological industries.

Emphasis would be upon teaching and learning fundamental principles upon which to base a breadth of training which would produce technicians and artisans sufficiently flexible to cope with future demands put upon them by electronics, automation, computers, etc., in the closing decades of the twentieth century. Curricula and courses should be carefully balanced to insure a useful educational experience.

A significant effort of such a technical college should be directed to continuing study of developments in the technological and vocational fields in order that its courses can anticipate future trends. Experimental and innovative programs in technological and vocational education and the maintenance of close liaison with business and industry will be required to accomplish this.

The scope of an investigation into the potential for this kind of education and for creative approaches to experimental or innovative programs of technological and vocational education is beyond the time limit imposed upon Committee O — perhaps beyond the qualifications of the membership of Committee O. Such an investigation might better be undertaken by a committee specially selected to study the broad area of technological and vocational education.

5. Automated and Programed Learning

Throughout this report the broad recommendation that any

new experimental or innovative program in higher education exploit all types of mechanical and electronic aids to teaching and learning to the fullest extent consistent with sound educational practices is implicit.

Appendix F illustrates something of the potential for automated and programed learning. The instrumentation and techniques suggested may be incorporated into the design and implementation of the programs recommended for feasibility studies, implementation, or investigation by special committees.

6. Programs at the Graduate Level for Meeting Mid-Career Needs

Committee O has construed its purpose to relate to problems at the level of undergraduate education. However, it is difficult to ignore the needs of career personnel in heavily industrialized areas whose qualifications are becoming obsolete as a result of the increasing demand of technologies. These persons have an increasingly greater need for graduate education with emphasis upon professional curricular content, especially in engineering, behavioral science research, business management, and public administration. Mid-career education for such people is not satisfied by traditional extension or evening courses, workshops, or courses appropriate to the young graduate student preparing to enter a career.

A significant number of persons who reside in populous areas in Illinois distant from graduate and professional schools of universities are finding themselves in need of graduate and professional courses to maintain their situations in their employment. Extension divisions of universities have limited offerings with a minimum of qualified permanent faculty.

Committee O has debated the notion of an experimental graduate and professional school at O'Hare Airport, Chicago, permitting attendance twice per week, offering programs in selected professional areas determined by need and supplemented with independent study. A "sustaining faculty" from public and nonpublic institutions in the Chicago area could be recruited, offering courses they teach in their home institutions. Library and study facilities and occasional overnight lodging would be

required. Research would be needed to determine whether the number of mid-career personnel in a given populous industrial region would sustain a continuous program. There is the possibility that within two to five years the number of persons participating in the program would gradually dwindle until demand should cease.

Perhaps a more efficient arrangement could be achieved with a faculty member of a graduate or professional school giving a tele-lecture to an industrial or professional group in a distant city, with provision for two-way communication and utilization of the "blackboard by wire" technique. The latter would require an electrowriter and a slave unit with an integrated screen projector.

The development of closed circuits for television linking graduate or professional schools with industrial complexes within the state would provide another device for teaching graduate courses to industrial or professional groups.

Either of these techniques might be more reasonable than transportation of the professor to an industrial center or individual students to a central classroom. Loss of time in travel and concentration of subject matter in a limited number of single presentations at intervals of a week or longer constitute serious disadvantages. However, should the graduate or professional course require extensive laboratory or library facilities, presence of the student on the campus might be a necessity.

An alternative would be establishment of centers of graduate instruction beyond the normal reaches of established universities, with the attendant difficulties of providing competent faculties who would require extensive research facilities to maintain their professional interests.

The problem of providing graduate and professional instruction for mid-career personnel is sufficiently complicated to merit the close study of a special committee. The advantages and disadvantages of various approaches to its solution must be evaluated, the needs in industrialized areas must be surveyed, and the possibilities of faculty resources of existing graduate and professional schools geared to the needs of mid-career personnel must be explored. (See Appendix G.)

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7. Development of a Television Network for the State

Interconnected television outlets distributed prudently about the state could have significant implications for interinstitutional sharing of instructional resources, adult education, professional education, and graduate education.

However, other agencies of the state, especially the Office of Public Instruction with its concern for elementary and secondary education, also have a substantial interest in the development of a state educational television network. Some state agency should provide leadership in coordinating all potential interests in television so that all together may justify what one alone may be insufficient to justify.

APPENDIX A

The "charge" of the Board of Higher Education to Committee O is set forth in Report No. 39 of the Executive Director, "Master Plan Study Committees and Advisory Committees," dated September 27, 1965. The working questions for the committee, presented on page 224 of the report, are reproduced below.

COMMITTEE O
PROGRAMS AND EXPERIMENTATION

1. What serious deficiencies, if any, exist statewide in terms of the variety, balance, and quality of instructional programs? How can these deficiencies be corrected?

2. How can high quality instruction be assured throughout undergraduate programs? What steps should be taken to protect instruction in the universities against possible encroachments of research and other interests? As enrollments increase, how can institutions best develop and utilize modern media of mass instruction, such as ETV, programed instruction, independent study, etc.?

3. What types of experimental programs or situations should be developed to improve instruction? Who should conduct the experimentation? On what scale should it be launched?

4. Is it more desirable to establish an experimental institution or to develop experimental programs in one or more existing institutions? Which arrangement would be most productive? most creative? most economical? better for implementation? or should both methods be used?

5. If an experimental college is recommended, how should it be developed? Who should control or govern the college? How should it be organized? Where should it be located? What should be its relationship to other state-supported universities? How can its program best assist in the improvement of instruction in state-supported institutions?

APPENDIX B

REGIONAL ASSOCIATIONS OF INSTITUTIONS FOR MUTUAL ASSISTANCE IN PROVIDING INSTRUCTIONAL RESOURCES

In a Master Plan for Higher Education in Illinois the Illinois Board of Higher Education predicted that the task of finding an estimated 3,000 new faculty members each year until 1975 would be "prodigious." To find that many whose qualifications are equal to those now found in Illinois institutions would be "virtually impossible." The report continues,

"Unless some bold and imaginative steps are taken immediately, the quality of instruction in Illinois institutions will deteriorate rapidly. Given the number of people available in the field and those eligible to enter, it appears unlikely that the shortage of faculty can be met in sheer numbers. Other means must be found and used to make maximum use of the outstanding professors now on the university and college staffs and to encourage the learning process in other than traditional classroom situations.

"Some of these means have been under experimentation for many years in this and other states. Closed- and open-circuit television, a state wide educational television network, team teaching, credit by examination and other techniques have proven successful in a wide variety of circumstances. Programed instruction is already past its initial stages of development and other means of speeding and perfecting learning processes are being considered. The great lag in the use of new techniques can be attributed primarily to the reluctance or apathy of both faculty members and administrators to change from the traditional methods. The lag in more expensive experimentation can be attributed to the lack of public funds. Little money has come from sources other than private foundations. If the State is to assure a quality education to an ever larger proportion of its youth, it must devote greater attention and more of its resources to improvement of techniques for mass education."

It is appropriate to propose further experimentation and implementation of recent developments in instructional methodology. Experience and research demonstrate that there is in fact a "technology of instruction" maturing which, when applied with pedagogical sophistication, can extend available faculty resources and, more important, can result in more significant student learning.

The predisposition of the Board of Higher Education to encourage further exploration in the application of new instructional procedures and arrangements is praiseworthy. The question then becomes one of how to organize and direct these efforts in a practical, meaningful way. The applications of many of these promising new developments are limited by the availability of knowledgeable and experienced people who can put them to work effectively. They are limited further by the cost of the technology upon which they rely. For example, televised instruction can be effective, but its development requires a skilled teacher, at least one specialist who knows the potentialities and limitations of television and the requirements of effective teaching, and a number of technicians. The paraphernalia of television production is complex and expensive. Programed instruction requires as a minimum, skilled programers thoroughly familiar with the subject matter, and its proper development includes painstaking pretesting and revision. Furthermore, if the program is computer-assisted, as it appears the best programed instruction will be, then much electronic equipment and technical assistance are required. Credit by examination (and the equally important related areas of testing for admissions and counseling, placement, and transfer) requires skilled measurement specialists.

Few, if any, institutions have sufficiently large student populations to justify the expense of using these methods as effectively as they can be. More commonly, they are seriously misused or unused for lack of adequate support. There seems very little likelihood that the developing community colleges, which appear destined to provide the base of the pyramid for higher education in Illinois, can develop and use these methods out of their own resources. On the other hand, it may be doubted that they will be able to provide quality education without using them.

It is tempting to recommend state, interstate, or even national centers for developing these kinds of media and programs. Indeed, televised courses such as "Continental Classroom" have been prepared for national distribution. Such organizations as the Committee of Institutional Cooperation of the Big Ten and the University of Chicago have had groups attempting to provide instruction shared among those institutions. But the evidence is clear that faculties who have had no significant part in the development of instructional materials which are a fundamental part of their courses cannot use them and will not use them effectively.

It is proposed that an intermediate approach between institutional self-sufficiency on the one hand and a "super institution" on the other be studied; namely, that there be a serious examination of the feasibility of a loose association of the institutions within a sufficiently limited geographical area so that faculties can meet and interact to develop and to use cooperatively the resources that none of them can afford alone and which would not be used if imported and imposed from without. Fundamental to the success of such associations will be the need to develop incentives for institutions, departments, and individuals which provide a valid reason to substitute in some measure mutual cooperation for traditional autonomy.

It is not intended that regional associations should relieve individual institutions of their responsibility for innovation, experimentation, and institutional research. Rather, such associations will provide support, in terms of facilities and personnel, for many projects which could not be accomplished by a single institution.

It is not feasible to predict all of the varieties of profitable interinstitutional cooperation which might occur. However a few examples are suggested below. This is not the place to review the literature of research and experience dealing with these proposed innovations, but brief comments will be made about each.

Televised Instruction

Television is not a method of instruction, but a means of presenting instruction. Its use takes many forms including the

presentation of outstanding lectures and/or demonstrations that may be too specialized or too difficult to be commonly available. Televised instruction may originate "live" from one location and be received simultaneously at others (with the possibility of telephone communication for students in remote locations to speak with the television teacher), or it can be prerecorded and distributed on videotape. The ability to record and revise instruction has significant implications for the improvement of instruction since it permits instruction to be recorded, studied, and revised until it elicits satisfactory levels of student achievement.

Televised instruction need not be the sole means of instruction in a particular course. Most frequently it carries that part of instruction which is normally lecture-demonstration. The faculty member is relieved of that burden and can concentrate upon that part of the instruction requiring more personal student-teacher interaction. Let it be recognized, however, that this kind of "team teaching" is easier to describe than to accomplish effectively. There must be free and ready communication among those who have different instructional roles if the result is to be integrated for the student.

Programed Instruction

Programed instruction, which is commonly used in conjunction with other means of instruction, is a method which includes: the development of a statement of detailed instructional objectives, the presentation of instruction in optimum size steps, the provision for student response to the instructional stimuli, and the systematic testing and revision of materials to insure that students understand the material being taught. The format of a program of instruction may be presented in printed form, by machine, or by film or videotape.

Programed instruction mediated by computers, which select the programs of instruction differentially according to the characteristics of individual students, has especially important implications for individualizing instruction of proven effectiveness for large numbers.

Testing

Psychological measurement has developed to the extent that it can be extremely valuable for selection of students, for placement of students in appropriate course levels depending upon their aptitudes and prior education, for evaluating students' academic learning by other than formal means in order to grant proficiency credit, and for improvement of the usual evaluation in courses.

These considerations are most significant in view of the wide differences between students in terms of their innate aptitudes and of the preparation they receive in the lower schools.

Improvement of testing services is especially critical in helping to solve problems of articulation between the community college and the four-year college.

Miscellaneous Instructional Materials such as Audiotapes, Motion Pictures, Film Strips, and Slides

Such materials, when carefully planned and integrated into the instructional process, can be valuable in programs of independent and individualized instruction. Although these devices require special staff and facilities for their preparation and operation, their effectiveness depends upon the pedagogical sophistication with which they are planned and used.

Consultation, Research, and Development of Instruction

As has been indicated, a discipline and technology of intruction which calls upon the capabilities of many specialists is developing. Professionals are being developed who can consult with and advise the faculty on instructional methods and procedures, on problems of curriculum, and on the design of research to evaluate differential instructional methods. Such people are in short supply and will have to be shared among institutions or many will have to do without them.

Internship Programs and Preparation for College Teaching

Universities should establish programs to prepare graduate students to teach in institutions of higher education, especially the community colleges. With proper training and supervision, these students could contribute significantly to the educational programs of the community colleges while receiving valuable on-the-job experience. Such a program might rely heavily upon mutually prepared materials, as described previously, to insure an acceptable level of quality.

This practicum concept also can be applied in reverse. Students in technical-vocational institutes will be given practical experience at technical levels at some of the senior institutions (e.g., a student of electronics might be employed part-time in the television facility of another institution).

In each region, the senior institution should develop graduate programs beyond the master's level to prepare students who wish to become college teachers. Such programs should emphasize competence in subject matter. They should also provide orientation to the community college and the four-year college, information about individual differences and the learning-teaching process, an understanding of student assessment, and an introduction to teaching methods and procedures.

Students enrolled in these programs shall be given concurrent opportunity to do supervised teaching in the community colleges of the region. Thus, the community colleges will be aided immensely by having a source of additional staff and, in the long run, by having a source of especially prepared teachers; the graduate students would be provided an opportunity for supervised experience, with pay.

The proposed training program would, in some instances, articulate with the use of instructional media discussed in another part of this appendix. For example, the students could be involved in the planning program of a televised series. This would give them experience in course planning and an opportunity to work with and observe a senior professor; they would then be prepared to handle the discussion or quiz sections that would normally supplement the televised material.

Simplified Interlibrary Loan Procedures Among Cooperating Institutions, Including Joint Library Privileges

See Appendix D.

Shared Use of Complex Facilities, such as Computers

A single, large computer, interconnected by data transmission lines, might be used for recordkeeping and business office operations.

If the concept of a loose regional confederation of institutions proves viable, there might be seven or eight such associations in Illinois. There might be interaction among them and, occasionally, different groupings depending upon interests, problems, and resources. An association of this kind would be most helpful to the community colleges, especially if the association included an established senior institution which might either have or be able to secure staff facilities more readily than could newer schools. Great care will be required to insure that the association is a partnership and not a dominant institution with satellites. The latter situation probably would not long endure.

The proposal is that funds be provided to conduct feasibility studies in two or more locations during the next biennium. The funds would be used to provide a study coordinator, released time for faculty and staff at the institutions involved, travel, consultants' fees, and seed money to begin implementing and testing some initial cooperative projects.

It is essential that there be a period of intensive study by faculty and staff of the participating institutions to: (1) define problems which are potentially amenable to joint solution; (2) propose organizational, operational, and methodological solutions; (3) secure faculty endorsement of proposed projects; (4) study implications of the proposed program for staff, space, equipment, and operating costs; and (5) design procedures for review and evaluation of projects with attention to relevant educational, sociological, and management factors.

APPENDIX C

ENCOURAGEMENT OF INSTRUCTIONAL EXPERIMENTATION AND INNOVATION IN EXISTING INSTITUTIONS

The climate in higher education is becoming favorable for the emergence of significant experimentation in the process of instruction. Several principal considerations support this assertion. It is becoming recognized and accepted among educators that the quality of instruction must surely decline unless creative ways can be found to meet the problems of soaring enrollments. There is dissatisfaction among many with the structure of courses and curricula, particularly as curriculum reform in the secondary schools produces students in the colleges whose preparation shows the benefit of such reform. And there is a growing realization that there has been overemphasis on research as the best route to recognition and promotion. This requires correction.

Within our institutions are faculty who are exceptionally able and willing to expend their talents in systematic attacks upon problems of instruction. For example, in one institution in the state, during the past two years, fifty-nine faculty members were granted, on the basis of proposals they had developed, full release during the summers to work on improving their own instruction. At the same institution, organizations with responsibility for services designed to improve instruction find themselves continually falling behind in their efforts to keep up with requests from the faculty. There is a spirit of innovation and experimentation in the air, and now is the time to capitalize upon it.

There are persuasive reasons for the state to provide financial support for the faculty of its institutions to design and carry out experimental programs of instructional improvement.

1. Experimentation and innovation offer education's best hope of devising more effective instruction of students.

2. Seed grants provided by the state will frequently result in development of major projects supportable through federal and foundation grants. However, federal and foundation grants are primarily available for projects in accord with the interests

of those who administer them. The state should not limit its efforts in experimentation with instruction only to those kinds of projects which promise to find favor elsewhere.

3. The results of experimentation on instruction carried on in existing institutions are more likely to be applicable to other similar institutions than those generated in an "experimental" institution where the faculty, students, and the general climate are likely to be atypical.

4. Research on instruction in existing institutions can proceed from a known base and can be judged in comparison to a known level of performance.

5. State support of research on instruction would provide evidence to faculties that the society which supports them is interested in instructional improvement. Faculties are frequently criticized for their emphasis upon research and publication, to the detriment of instruction, but, on analysis, it appears that faculties are merely responding as other people do, in that they give their best effort to that which society best rewards.

Instructional experimentation and innovation is not inexpensive. It requires substantial time of the professor. A person does not usually make a significant revision of the curriculum, develop new ways of organizing and presenting material, or evaluate his outcomes, while at the same time carrying a full load of teaching and research; he must be released for such work. Additionally, there are important support personnel needed. For example, educational psychologists frequently have a significant contribution to make; research and measurement specialists can help with evaluation; and if the "new media" are to be involved, one requires programers, television specialists, and a whole panoply of artisan-technicians; specialized equipment is frequently needed; and all such people and equipment need space in which to be housed.

Under present budgetary arrangements, it is often very difficult to free substantial funds to support work of this kind. Such work may not, for example, have the immediate effect of providing for more students, and therefore that source of funds is not available. Furthermore, if budgeted under "new programs," funds for instructional improvement must compete throughout the entire budgetary procedure with many other requests for

new and enlarged programs. Frequently the terms of competition are not such as to favor requests of this kind.

In view of these considerations, the committee recommends that the Board of Higher Education devise and promote policies that will encourage institutions to include within their budgets requests for funds earmarked for experimentation on instruction. Specifically, the committee believes that as a minimum the Board of Higher Education should indicate to the public institutions that it would commend thoughtful budget requests for funds to support instructional experimentation and innovation.

APPENDIX D

ACADEMIC LIBRARIES

Academic libraries are of two basic types: "college" level and "university" level. Eliminated from consideration here are those types of libraries required by the narrowly specialized institutions of higher education.

The "college" level library is the undergraduate student's library. It is designed primarily for the student engaged in general education who is acquiring the fundamental prerequisites for specific disciplines. The community colleges and four-year colleges require this type of library. The library demands of such institutions are not excessive. Although the American Council on Education indicates that 100,000 volumes is minimal for good undergraduate instruction, only a few of our best liberal arts colleges in Illinois have libraries of this size. However, it is probable that a top quality undergraduate program can be supported by a carefully selected library of fewer than 100,000 volumes. "College" level libraries apparently face no significant problems in the immediate future.

The "university" level library is designed to serve the needs of the developing scholar and specialist. It goes a step beyond the "college" level library in that it places emphasis upon a variety of subject matter fields, supports advanced and highly specialized instructional programs, and serves the needs of advanced graduates and faculty members involved with the

extension of knowledge through research.

The present status of "university" level libraries is critical and promises to become more so with each passing day. A few facts illustrating the "publication explosion" will serve to emphasize the problems faced by such libraries. In 1964, 20,542 new books and 7,909 new editions of older books were published in the United States, nearly twice the number published in 1960. In 1964, a total of 22,262 periodicals and 80,000 technical reports came off the presses in the United States. In the year 1750 there were 10 scientific journals being published in the world; today there are approximately 7,000 related to the biomedical sciences alone. In 1958, chemists produced 558 articles every two weeks for their publications; in 1965, they were publishing 6,700 every two weeks.

Just how many volumes are needed to support a variety of graduate programs in a university is debatable; there are no established norms. If one accepts the minimal standard (1.5 million volumes) mentioned by the American Council on Education, there is one public university in the state that meets and surpasses that standard — the University of Illinois, with approximately 4,000,000 volumes. Dean Robert B. Downs, Dean of Library Administration at the University of Illinois, recently indicated that it is doubtful that high-level doctoral work in a variety of fields can be carried on with fewer than 500,000 volumes. If this is accepted as a minimal standard, two of our public universities meet or surpass this requirement — the University of Illinois and Southern Illinois University (approximately 800,000 volumes). For comparative purposes, the following are the book holdings, as reported in 1964, of the other state institutions of higher education: Eastern Illinois University, 123,000; Illinois State University at Normal, 248,060; Northern Illinois University, 253,830; Western Illinois University, 129,819.

APPENDIX E

THE EXPERIMENTAL COLLEGE

It is proposed that the State of Illinois support the establish-

ment of an experimental college specifically designed to accommodate a student body selected by special admission criteria and procedures. The primary requirement for admission to the college would be high intellectual achievement and potential, but an appreciable fraction of the students would be selected because of their failure in secondary school or college to attain a level of accomplishment commensurate with their inherent abilities.

The unique character and the special experimental nature of the institution would derive from the intermixture of the two types of students. A primary goal of the experiment would be to develop procedures for the identification, development, and utilization of the academic potential of students whose early lack of accomplishment would otherwise deny them the opportunity for a college education. A second purpose would be to devise effective procedures for utilizing the teaching potential of students of ability and accomplishment so that such students could contribute materially to the educational development of others of lesser degree of intellectual achievement.

While the design features of such an experimental college have not been specified in detail by the committee, certain essential features appear to be necessary for the success of such an experiment. These features include the following items.

Selection Procedures

The selection of students in both categories must be a very careful one; entirely new criteria, such as those developed for the "Upward Bound Program," will have to be established. Relative to the more conventional institution, the role of the admissions office will be extremely crucial and its methods and procedures will have to be quite unconventional. Recommendations by secondary school teachers and counselors should probably have great importance, and detailed, diagnostic interviews of applicants will be mandatory. Aptitude and self-image tests will have far greater significance than achievement tests for those of accomplishment as well as those lacking it. Faculty participation in the selection of students for admission will probably be necessary to furnish additional breadth and depth of opinion.

The need for such special admissions criteria and procedures for the fraction of students of low secondary school performance is obvious; that many also apply to the other type of student to a considerable degree is less apparent. While the prestige of the institution should be such that voluntary applications for admission will be forthcoming from students of demonstrated performance, some of these applicants will be more suited to the experimental college than will others. Care in the selection of both types of students will be necessary.

Above all, the institution will have to rely on the prestige of its high selectivity and its high academic standards to attract the superior students it requires.

Curricula

The institution must offer on the one hand a curriculum which makes it academically first-rate — a prestige institution — and on the other, a remedial program. It would seem best to base both of these on the tradition of the liberal arts, yet much more flexibly so than in the conventional institution. The remedial program should be designed to utilize students as tutors and instructors and to emphasize the social, cultural, and motivational development of the slow student. Measurement of progress of both types of student should avoid the conventional measurement of accumulated course credits; rather, committee evaluation, coupled with comprehensive examinations, should be used to measure progress toward the degree.

The conception of a college education as encompassing a four-year span of required courses and electives would not apply. Three years, or even fewer, should apply to some; five or more to others. At the same time, the achievement of students must be measured by procedures which are easily interpretable by graduate and professional schools (e.g., Graduate Record Examinations and area achievement tests) so that the degree earned carries full value in the academic market place.

Evaluation of Results

The use of standard area achievement tests, the Graduate

Record Examination, comprehensive examinations, and the like will furnish an objective evaluation of the success of the experimental college insofar as academic accomplishment is concerned.

Comparison of self-image test data will furnish a measure of the success of the college in its efforts to motivate a student. Tests administered upon the student's entry into the college and at intervals following will aid in determining his progress and indicate changes in his goals.

Subjective evaluations by committees (perhaps composed of students and faculty) will furnish measures of the success of the experiment in stimulating social development and character and personality maturation, as well as another measure of intellectual development.

Finally, one measure of success of the experimental college will be represented by the number of its students who progress to graduate and professional schools.

The Academic Atmosphere

Particular effort must be directed toward promotion of an effective learning environment. Success in college is related not only to the inherent intellectual ability of the student but also to his adaptability to expected behavior patterns and the rules of the institution. Some who fail in college, including students of superior ability, do so because their learning curve and timing do not correspond to the chronological norm; others fail because they are intellectual nonconformists who are out of step with the majority; still others fail because of social and cultural traditions which constitute handicaps they cannot suddenly overcome. The conventional college is not structured to accommodate any of these students; the experimental college envisaged must be. On the one hand, it must be permissive in its attitude and its response to students, in the lower division particularly, yet on the other hand, it must maintain and impose rigorous standards. A high faculty-student ratio will be required; effective counseling service will be essential. Instruction of students by students, leadership by example, and a strong esprit de corps are all essential elements of this institution if it is to be successful when faced with an appreciable fraction of students who are

deficient in any of these ways. It is important that students know each other.

All of these features impose exceptional requirements on the physical facilities of the institution. Not only classroom facilities, but also resident hall, dining, and social facilities, must be designed with these special requirements in mind. Faculty offices, conference and seminar rooms, special testing and evaluation facilities, and other features of the physical plant must be designed to accommodate to the special character of these highly selected students. The institution must be flexible and able to conform to the needs of the student, not vice versa.

Size

The special features described above as essential, if such an experimental institution is to be successful, lead inevitably to the requirement that such an institution be residential and of a relatively small size. It is difficult under the most favorable circumstances to maintain a closeness of relationship if the numbers initially exceed 2,500 to 3,000 students; thus, there are severe limitations imposed upon the size of the student body. A corollary is that the per student cost will be high.

Such an experimental college could be expected to provide a breakthrough in procedures for the penetration of the barriers which separate large segments of our population from an effective and successful college experience and the education for the role in society which their inherent ability should make possible. The potential represented by the majority of the student product, whose ability for service to society will be magnified by such a unique experience in higher education, stands as a guarantee for profit from such a venture.

APPENDIX F

AUTOMATED AND PROGRAMED LEARNING

In designing a college for the future, the Illinois Board of Higher Education should give serious thought to exploiting all

types of mechanical aids. America has gained world fame in its use of mechanical methods and equipment. We introduced mass production methods particularly for automated construction and have adapted the assembly line techniques to many complex problems. Americans are noted for their mechanical aptitudes and their use of machines. An excellent illustration is the use of office equipment of all kinds, including computers, for handling routine procedures. Many other examples could be given to demonstrate the high aptitude of Americans for gadgetry.

It would be consistent and exciting to design a new college that makes elaborate use of mechanical methods. It should be advertised as an automated college and go out of its way to adapt the latest electronic discoveries that could be used as teaching aids. Students should be equipped with telephones, television sets, tape recorders, desk-size computers, and all of the types of hardware that have been invented or will be invented thay may help with instruction. They should be able to dial a computer at any time to obtain lectures, instruction, problems, and examinations. Extensive use could be made of mechanical readers and graders to enable the student to evaluate his own progress. Lessons should be designed by computers to emphasize points that the student had not learned. Examinations would be analyzed by computers, which in turn would design the course of instruction to insure the maximum progress of the student. Closed television circuits should be at a student's fingertips. The professors in this institution would devote their time to instruction and designing electronically graded examinations which a student could take at any time.

This highly mechanized and automated college should probably be located in the Chicago area where it could draw from the radio and television stations and all of the recent advances in office equipment and mechanical aids. As computerized information becomes available in the United States on system networks, these systems should be available to this college. Even the library could be completely recorded on microfilm or magnetic tape with readers and printouts at the student's touch.

The whole college should be designed with an open-ended attitude so that new developments could be pyramided on top of those already being used. The college would be designed to grow

into the automated age.

The students should not be treated as serial numbers and handled as if they were a few pips on a computer tape. Each should feel that he is a distinct individual allowed to progress at his fastest rate. Furthermore, he could be in instant touch with any of his professors or advisors by a push-button system. Finally, the students should represent the true products of an American system.

APPENDIX G

PROGRAMS AT THE GRADUATE LEVEL FOR MEETING MID - CAREER NEEDS

Throughout Illinois in industry, business, and public agencies, there is an increased demand for graduate education with particular emphasis on professional curriculum content. Engineering, behavioral science research, business management, and public administration are perhaps the fields in which demands are most intense. This pattern points to an important problem for educational content and techniques. In many instances these needs arise as by-products of rapid social change and are the needs of career personnel whose qualifications have become obsolete vis-à-vis the ever-increasing technology of their positions. Sooner or later, universities will have to face the challenge of mid-career education as an indigenous and distinct educational aim that cannot be shunted into the traditional pattern of the evening division, the workshop, or the dilution of course content normally offered to young graduate students. The process of integrating the theoretical, conceptual, and methodological resources of the latest developments in the arts and sciences with the meaningful experience and self-development of the practitioner represents a distinctly different educational task from the teaching of the traditional graduate student who, as a "future practitioner," is presumed to be a tabula rasa.

While this need for curriculum innovation and experimentation in teaching is in itself a serious challenge to planning and experimentation, it relates to a second problem which is receiving

attention from various sources. This problem is, again, a problem of accessibility to educational resources, that is, the geographical distance to educational institutions. There are several populous and active areas of Illinois which do not have institutions of higher education within their immediate regions. While there have been a significant expansion and diversification of the distribution of universities in Illinois, a pattern of equal opportunity in all regions of the state has not been formed.

The problem of university access is a by-product of the mobility, complexity, and change characteristic of contemporary life. Traditionally, attendance at a university was tantamount to symbolic and actual removal from the on-going stream of social life. This presumes the student's intellectual, social, and physical immersion into the university community. Today this model is practically a myth. Though universities maintain requirements of a year of "full-time residence," such requirements are frequently met by the number of courses for which the student is registered while he is, particularly in the urban environment, a commuter. It is possible in the city for a student to meet these requirements and continue to engage in activities pertinent to his own personal career. The citizen of those areas of the state which are far removed from the university cannot engage in this synthesis of career and education.

The traditional way in which universities have sought to meet regional needs has been by the establishment of extension divisions. This pattern has rarely been approached with experimental intent and comprehensive planning. Too frequently the extension division suffers from limited offerings, shortage in numbers and qualifications of faculty, and lack of stability. Without wishing to disparage possible future consideration of this satellite model of the educational enterprise, another project is herewith presented for consideration as an experimental institution supported by the State of Illinois.

The Experimental Model

It is proposed that the concept of a commuter institution be expanded to avail itself of the technological resources of the day. If it is possible to offer graduate education in quality to commuters

using the public transportation resources of the city, a similar opportunity should be provided for a student population covering a significantly expanded sphere by utilizing the commuter potential of rail or air travel. If it is possible to meet residence requirements in the urban university by being present three days a week, it should be possible, with careful planning and ingenious design, to achieve a solution to the problem of attendance on the basis of two days per week.

An experimental graduate and professional school offering programs in selected professional curricula as well as in other more general academic areas, might be established at O'Hare Airport. The professional curricula would be determined by need and demand. A carefully designed basis of representation from the traditional disciplines would be available to provide the necessary resources in academic depth and breadth.

Through close coordination and by way of possible special arrangements with the airlines, curricula would be set up to allow students from various areas of Illinois to commute to O'Hare Field two or three days per week.

This school would seek answers to the following questions:

1. Can a meaningful, academically respectable educational program be offered on the basis of minimum physical attendance? What contribution could increasing use of self-study, telephone, television, or radio communication make to such a program?

2. Can the learning process offered in such a school become an intellectually vital, educationally meaningful experience to personnel who are in the middle of their career and who might perceive education initially merely as means to advancement?

3. Can the program offered by such an educational institution maintain stability and standards and yet be flexible and sensitive to the changing demands of the community, be it industry, business, or government?

The success of this enterprise would greatly depend on obtaining faculty who could make this experimental school an exciting and viable enterprise rather than a mere processing plant. While it is possible that a number of faculty members could be recruited to staff such an institution on a full-time basis, the probability of doing this with quality personnel is not too great unless the experimental school also becomes identified as a research insti-

tute which would enable faculty members to engage in their own professional research.

Another source of staffing the school must be considered. Since many of the courses will be taught once, or, at the most twice, a week, arrangements might be made with the educational institutions of the Chicago area, public and nonpublic, whereby interested faculty members would replicate courses which they are currently teaching at their home institution and thus be on the "sustaining faculty" of the "Airport University." Appropriate compensation to the schools and/or to the faculty members could be arranged either through the state or through grants.

This initial and sketchy proposal does not include the detailed consideration of other areas requiring specific planning. Resources for the students such as library and study facilities and the availability of occasional lodging would need to be planned to make this concept a meaningful reality. The potential traffic which could accrue to the airlines from such a program might induce the air transport industry to aid this plan by providing special schedules and reduced fares and by supporting the physical establishment of such a facility at O'Hare Airport.

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